

**WHAT IS CLAIMED:**

1. A method for locating select images on a belt after an image on paper registration process, comprising:

generating a test pattern;

printing a test pattern;

measuring at least one test pattern parameter;

using the at least one test pattern parameter to determine a lateral distance required to shift an image to a desired location on the belt;

shifting the image to the desired location.

2. The method of **claim 1**, wherein the at least one test pattern error includes a lateral magnification error and a lateral positional error.

3. The method of **claim 1**, wherein the step of shifting the image to the desired location is done during the gross registration phase, the expanded chevron phase (if expanded chevrons are used), and the standard chevron phase of image on image setup.

4. The method of **claim 1**, further comprising detecting the residual error in the lateral location of the image after an image on image registration setup;

using the residual error in conjunction with the at least one test pattern parameter to determine the lateral distance required to shift an image to a desired location on the belt.

5. The method of **claim 4**, where the image being shifted is a registration mark.

6. The method of **claim 4**, wherein the method is used to shift both an inboard and an outboard registration mark of a reference color with respect to an inboard MOB sensor and an outboard MOB sensor respectively.

7. The method of **claim 6**, wherein the lateral distance required to shift an image to a desired location on the belt is used to shift an inboard and outboard registration mark for every other color with respect to the inboard MOB sensor and the outboard MOB sensor respectively.

8. The method of **claim 4**, wherein residual error is set to zero after the method is performed.

9. The method of **claim 1**, wherein detecting the residual error in the lateral location of the registration mark is accomplished by a MOB sensor

10. A method for maintaining a registration mark in the scanline of a sensor, comprising:

- detecting the residual error in the lateral location of a registration mark after an image on image registration setup

- determining the lateral error between the actual positions of the inboard and outboard registration marks and the positions desired for image on paper registration.

- determining the offset between the target location for the registration mark and the actual location of the registration mark;

- combining the residual error, the lateral error, and the offset to determine the lateral correction needed to maintain the registration mark in the scanline of a sensor;

- using the lateral correction to offset the registration mark.

11. The method of **claim 10**, wherein the lateral correction is used to offset a plurality of registration marks.

12. The method of **claim 10**, wherein using the lateral correction to offset the registration mark includes:

determining the approximate number of pixels that correspond to the required lateral correction;

shifting the target position of the registration mark by the approximate number of pixels.

13. The method of **claim 10**, wherein detecting the residual error in the lateral location of the registration mark is accomplished by a MOB sensor.

14. The method of **claim 10**, wherein the method is performed during an image on paper registration process.

15. A method for repositioning a mark on a belt after an image on paper registration process, comprising:

printing a test pattern;

measuring at least one test pattern parameter;

detecting a mark on a belt and detecting at least one imaging error associated therewith;

using the at least one test pattern parameter and the at least one imaging error to determine the lateral distance required to shift a particular image to a desired location on the belt;

shifting the image to the desired location.

16. The method of **claim 15**, where an MOB sensor detects the at least one imaging error.

17. An IOI registration system, comprising  
an initial gross registration mode including a plurality of first registration marks imaged on an image bearing surface,  
imaging said first registration marks on said image bearing surface until an initial gross registration is achieved,  
automatically switching said color registration system to a second registration mode in which said color registration system automatically images a plurality of second registration marks on said image bearing surface,  
wherein the lateral target position of the marks is shifted relative to the MOB sensors in each of the initial and second registration modes based upon the measurement of at least one test pattern parameter and at least one imaging error.